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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/997,604	11/29/2001	Hiroshi Nemoto	791_065	5235

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EXAMINER	
TSANG FOSTER, SUSY N	
ART UNIT	**PAPER NUMBER**
1745	

DATE MAILED: 05/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/997,604	NEMOTO ET AL.	
	Examiner	Art Unit	
	Susy N Tsang-Foster	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 February 2004 and 05 January 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *20040519* .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5 January 2004 has been entered.

Response to Amendment

2. This Office Action is responsive to the RCE request filed on 3 February 2004 and the request for reconsideration filed on 5 January 2004. Claims 10-23 are pending and are finally rejected for reasons of record which are reiterated below for applicant's convenience.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 12 and 19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant

art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claims 12 and 19, the limitation "wherein said primary particles consist essentially of particles having at least one side of each flat crystal face of length of 1 μm or more" is not in the original disclosure.

The specification states (see page 4 of substitute specification) that the primary particles of the positive electrode active material preferably contain those primary particles in which at least one side of each flat crystal face has a length of 1 μm or more and does not state that the all primary particles of the positive electrode active material have at least one side of each flat crystal face of length of 1 μm or more. The Examiner interprets the term "contain" to be synonymous with the term "comprising". Furthermore, it would be impossible to produce a positive electrode active material consisting essentially of primary particles in which at least one side of each flat crystal face of the particle has a length of 1 micron or more since not all primary particles are substantially octahedral in shape constituted mainly by flat crystal faces since some particles formed may be round and not have a flat crystal face.

The specification also states (see page 6 of substitute specification) that the positive electrode active material is characterized by consisting of primary particles mostly having the substantially octahedral shape and that all primary particles need not have a substantially octahedral shape since the particle diameters of the raw materials, the impurities in the raw materials, and the temperature distribution of the furnace during synthesis affects the growth of the crystal face and the growth of the crystal face may not take place uniformly.

Finally, the specification (see page 6 of substitute specification) also states that the particle diameters of the primary particles are obtained by analysis of the SEM image and the particle diameter measurement for individual particles are impossible. The specification also states (see page 7 of the substitute specification) that the amount of primary or secondary particles having particle diameters outside the specified ranges are at such a level not ordinarily detected in the methods of measurement for particle diameters mentioned in the specification. Hence, there is no experimental method of determining if all the primary particles are substantially octahedral in shape and even if there were all substantially octahedral, it is impossible to determine if all the primary particles have at least side of each flat crystal face of a length of 1 micron or more since some primary particle sizes are not detectable as stated in the specification.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 10-14 and 17-21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over the JPO machine translation of JP 08-217452 A.

The JPO Machine translation of JP 08-217452 A discloses a method of manufacturing a lithium battery comprising the steps forming an electrode body by placing a positive electrode and a negative electrode in contact with a separator, the separator being positioned between the positive and the negative electrode so that the positive electrode is not in contact with the negative electrode (see Figure 1 and paragraph 81 of machine translation).

The JPO Machine translation of the reference also discloses that the positive electrode comprises a positive electrode active material which is composed mainly of Li and Mn where the Li/Mn ratio is larger than 0.5 and positive electrode active material has a cubic spinel structure (see paragraph 34 of machine translation) and primary particles mostly have a substantially octahedral shape constituted mainly by flat crystal faces (see Figure 4 and paragraphs 76 and 107) where the length of one side of the octahedron is 1 micron or more. The primary particle size of the positive electrode active material can also be from 1 to 10 microns (see paragraph 56

of machine translation). Furthermore, since the positive electrode active material has the same particle shape, composition, and primary particle size as those disclose in the specification and being claimed in the instant claims, the primary particles inherently include particles having at least one side of each flat crystal face of length of 1 micron or more. The electrostatics and size of the primary particles inherently determine the size of the secondary particles and since the primary particle size range of 1 to 10 microns of JP 08-217452 A (see above) falls within the claimed range, the primary particles of JP inherently form secondary particles having a maximum particle diameter of 50 microns or less.

The positive electrode active material is formed of a raw material mixture comprising positive electrode precursor material comprising Li and Mn and heating the raw material mixture to a temperature and for a time which is effective to convert the raw material mixture into a positive electrode active material having the cubic spinel structure and primary particles having substantially octahedral shape (see paragraph 75 of machine translation).

8. Claims 15, 16, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the JPO machine translation of JP 08-217452 A in view of Zhong et al. (US Pat. No. 5,700,597, hereinafter '597).

JPO machine translation of JP 08-217452 A discloses all the limitations of claims 15, 16, 22 and 23 except that the lithium secondary battery has a capacity of 2 Ah or more and that the lithium secondary battery is used in an electric vehicle.

Zhong et al. '597 teach a lithium battery as a high energy density source for an electric vehicle (col. 1, lines 20-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the lithium secondary battery in the electric vehicle because a lithium secondary battery has high energy density, is light weight, and would not cause exhaust air polluting substances during the operation of the electric vehicle.

It would have also been obvious to one of ordinary skill in the art at the time the invention was made to produce a lithium secondary battery having a capacity of 2Ah or more in order to operate a high energy consuming electronic device such as an electric vehicle since the power requirements of electronic devices differ and it would have been obvious to manufacture lithium batteries with varying capacities for different applications. A person of ordinary skill in the art would be motivated to and would be knowledgeable about how to scale up the amount of active material necessary in a lithium secondary battery in order to provide enough electricity to operate an electric vehicle or any other electronic device.

9. Claims 10-14 and 17-21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Zhong et al. (US Pat. No. 5,631,104).

Applicants' claims are directed to a method of manufacturing a lithium secondary battery comprising a positive electrode active material which is composed mainly of Li and Mn and has a cubic spinel structure and the primary particles of the positive electrode active material has a substantially octahedral shape constituted mainly by flat crystal faces.

Applicants disclose in the specification that the definition of "mainly composed of Li and Mn" means that part of the Mn in the lithium manganese oxide $LiMn_2O_4$ may be replaced by

other elements such as an element selected from the group consisting of Li, Fe, Mn, Ni, Mg, Zn, B, Al, Co, Cr, Si, Ti, Sn, P, V, Sb, Nb, Ta, Mo, and W or that the lithium manganese oxide may contain B, Mo or W as an additive (see page 6, lines 18-25 to page 7, lines 5-10 of the specification). The applicants also prefer lithium manganese oxide to have a Li/Mn molar ratio of greater than 0.5 and examples include $Li(Li_xMn_{2-x})O_4$ where Mn is partly replaced by Li, and $LiM_xMn_{2-x}O_4$ wherein Mn is partially replaced by M that is a substitution element other than Li (see page 7, lines 11-23 of the specification). Applicants also disclose on page 11, lines 5-10 that production of the positive electrode active material of the present invention is conducted by firing a raw mixture consisting of given proportions of salts and/or oxides of various element including Li, Mn, and as necessary, a substitution element and addition elements in an oxidizing atmosphere at 700 to 900 °C for 5 to 50 hours.

Zhong et al. disclose a lithium secondary battery comprising a positive electrode active material with the formula $LiNi_zMn_{2-z}O_4$ where z can be 0.05, 0.1, 0.2, 0.3, and 0.5 (col. 8, lines 11-25) and Ni is the substitution element. The battery comprises an electrode group formed by placing a positive electrode and a negative electrode in contact with the separator, the separator being positioned between the positive electrode and the negative electrode so that the positive electrode is not in contact with the negative electrode (col. 6, lines 22-27 and Figure 1).

The positive electrode active material was synthesized with $LiMnO_2$, $NiNO_3$, and LiOH powders in appropriate amounts and heat treated at 750 °C in air for 4 hours and then the product was ground and mixed again followed by a second similar heat treatment for an additional 12 hours for z less than or equal to 0.3 (col. 8, lines 10-25). For the sample with z equal to 0.5, the

first heat treatment lasted 16 hours and the second heat treatment was performed at 850 °C for 12 hours. Zhong et al. also disclose in general that the heating can be performed between about 750 and 900 °C and more than one mixing and heating step may be desirable (col. 4, lines 7-17).

Zhong et al. also disclose $LiCr_{0.5}Mn_{1.5}O_4$ as the positive electrode active material synthesized using an appropriate mixture of EMD, Cr_2O_3, and LiOH powders wherein the mixture was heat treated in air at 800 °C for 4 hours, ground, remixed, and heat treated again at 900 °C for 11 hours (applies to claim 10, col. 9, lines 32-37).

Zhong et al. also disclose $Li_{x+y}M_zMn_{2-y-z}O_4$ as the positive electrode active material where the crystal structure is spinel and M is a transition metal, $0 \leq x < 1$. $0 \leq y < 0.33$, and $0 < z < 1$ (see abstract). The positive electrode active material is prepared by mixing reactant powders comprising electrolytic manganese dioxide, a transition metal source, and a lithium source in a stoichiometric manner followed by heating the mixture in an oxygen containing atmosphere from 750-900 °C (col. 4, lines 4-17).

Since Zhong et al. disclose identical synthesis conditions and formulas for the positive electrode active material in the lithium battery as discussed above [Zhong et al.'s formula (see abstract) encompasses the formulas $LiM_xMn_{2-x}O_4$ and $Li(Li_xMn_{2-x})O_4$] as those of the applicants, the properties cited in the instant claims 10-14 and 17-21 are inherent in the positive electrode active material of Zhong et al.

10. Claims 10-14 and 17-21 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Manev et al. (US Pat. No. 5,961,949).

Manev et al. disclose a lithium secondary battery comprising a positive electrode active material with the formula $Li_{1.025}Mn_{1.975}O_4$ having spinel structure and a mean particle size distribution of 2 microns (see col. 6, lines 5-10). The positive electrode active material was synthesized by heating 500g of ground MnO_2 and LiOH (raw material comprising Li and Mn) at a molar ratio of 2Li:Mn =1.05 and the mixture was fired at 750 °C for 48 hours (col. 6, lines 1-5). Manev et al. also disclose that the mixture is generally fired in the presence of a gas flow such as air or a gas mixture containing from 5 to 100 percent oxygen by volume, which is an oxidizing atmosphere (col. 4, lines 45-48). A lithium secondary battery also inherently comprises an electrode body formed by placing a positive electrode and a negative electrode in contact with the separator, the separator inherently being positioned between the positive electrode and the negative electrode so that the positive electrode is not in contact with the negative electrode so that a short-circuit does not occur and enable the battery to function.

Since Manev et al. disclose identical synthesis conditions and formula for the positive electrode active material in the lithium battery as those of the applicants as discussed above, the properties cited in the instant claims 10-14 and 17-21 are inherent in the positive electrode active material of Manev et al.

11. Claims 15, 16, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhong et al. (US Pat. No. 5,631,104, herein after '104) in view of Zhong et al. (US Pat. No. 5,700,597, hereinafter '597).

Zhong et al. '104 disclose all the limitations of claims 15, 16, 22, and 23 (see above) except that the lithium secondary battery has a capacity of 2 Ah or more and that the lithium secondary battery is used in an electric vehicle.

Zhong et al. '597 teach a lithium battery technology as a high energy density source for an electric vehicle (col. 1, lines 20-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the lithium secondary battery in the electric vehicle because a lithium secondary battery has high energy density, is light weight, and would not cause exhaust air polluting substances during the operation of the electric vehicle.

It would have also been obvious to one of ordinary skill in the art at the time the invention was made to produce a lithium secondary battery having a capacity of 2Ah or more in order to operate a high energy consuming electronic device such as an electric vehicle since the power requirements of electronic devices differ and it would have been obvious to manufacture lithium batteries with varying capacities for different applications. A person of ordinary skill in the art would be motivated to and would be knowledgeable about how to scale up the amount of active material necessary in a lithium secondary battery in order to provide enough electricity to operate an electric vehicle or any other electronic device.

12. Claims 15, 16, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manev et al. (US Pat. No. 5,961,949) in view of Zhong et al. (US Pat. No. 5,700,597, hereinafter '597).

Manev et al. disclose all the limitations of claims 15, 16, 22, and 23 (see above) except that the lithium secondary battery has a capacity of 2 Ah or more and that the lithium secondary battery is used in an electric vehicle.

Zhong et al. '597 teach a lithium battery as a high energy density source for an electric vehicle (col. 1, lines 20-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the lithium secondary battery in the electric vehicle because a lithium secondary battery has high energy density, is light weight, and would not cause exhaust air polluting substances during the operation of the electric vehicle.

It would have also been obvious to one of ordinary skill in the art at the time the invention was made to produce a lithium secondary battery having a capacity of 2Ah or more in order to operate a high energy consuming electronic device such as an electric vehicle since the power requirements of electronic devices differ and it would have been obvious to manufacture lithium batteries with varying capacities for different applications. A person of ordinary skill in the art would be motivated to and would be knowledgeable about how to scale up the amount of active material necessary in a lithium secondary battery in order to provide enough electricity to operate an electric vehicle or any other electronic device.

Response to Arguments

13. Applicant's arguments filed 5 January 2004 have been fully considered but they are not persuasive.

With respect to applicant's arguments regarding the 35 USC 112, first paragraph rejections for claims 12 and 19, the Examiner remains unpersuaded for reasons given in paragraph 4 above. It is especially noted that the substitute specification at page 6 states that the particle diameters of the primary particles are obtained by analysis of the SEM image and the particle diameter measurement for individual particles are impossible. The specification also states (see page 7 of the substitute specification) that the amount of primary or secondary particles having particle diameters outside the specified ranges are at such a level not ordinarily detected in the methods of measurement for particle diameters mentioned in the specification. Hence, applicant has not determined experimentally in the specification that the primary particles obtained consists essentially of primary particles that have at least side of each flat crystal face of a length of 1 micron or more. Applicant has only determined that the primary particles obtained comprise mostly of primary particles that are substantially octahedral in shape and have at least one side of each flat crystal face of a length of 1 micron or more from SEM image analysis.

Applicant's argument that the expression "consisting essentially of" renders the claim open only for the inclusion of unspecified ingredients which do not materially affect the basic and novel characteristics of the claimed invention is irrelevant because applicant did not originally disclose limiting the primary particles in the active material to be consisting essentially of primary particles that are substantially octahedral in shape and have at least side of each flat crystal face of a length of 1 micron or more. The term "comprise mostly" (found in the original disclosure) and the term "consisting essentially of" (as presently claimed in claims 12 and 19) are not equivalent terms.

With respect to applicant's arguments that the JP 08-217452 reference does not disclose substantially octahedral shape positive electrode active material, the Examiner disagrees with the applicant's analysis of the reference since the reference at paragraphs 76 and 107 specifically disclose that the primary particles are octahedral in shape which meets the limitation of substantially octahedral as claimed in the instant claims. **As seen in Fig. 4 of the JP 08-217452 reference, the shapes of the primary particles are nearly, if not, identical to the shapes of the primary particles shown in Fig. 1 of the present application.** The Examiner disagrees with applicant's assertion on page 3 of the response that the term "a regular octahedron needle-like" particle consists of a pair of regular octahedral-shaped end regions having an extension portion therebetween, rendering the particle needle like and that a far more descriptive of the shape would be "dodecahedral" because it is the Examiner's position that if the particle did not have 8 faces, it would not be called an octahedron in the reference. The applicant appears to redefine what the term "regular octahedron needlelike particle" means in the reference without supporting evidence.

Furthermore, the definition of a regular octahedron is an octahedron with eight equilateral triangles as faces (see Definition of Regular Octahedron [online]. Hyperdictionary, copyright 2000-2003 [retrieved on 2003-08-29]. Retrieved from the Internet : <URL: http://www.hyperdictionary.com/dictionary/regular+octahedron>). Figures of a Six-Fold Regular Octahedron are also included in the previous Office Action which show eight equilateral triangular faces for the regular octahedron (Six-Fold Regular Octahedron [online]. Tomoko Fuse, 2002 [retrieved on 2003-08-29]. Retrieved from the Internet : <URL: http://gallery.origami.free.fr/Auteurs/Japan/fuse/gallery/Six-

Fold%20Regular%20Octahedron.htm>). **The shape of the regular octahedron is identical to the shape of the primary particles shown in Figure 1 of the present application and in Figure 4 of the reference.**

The Examiner disagrees with applicant's assertion on page 4 of the response that the JP '452 reference motivates persons of skill in the art to attempt to select process conditions and raw materials so as to obtain regular octahedron needle-like particles which are then used as a positive electrode active substance because the JP '452 reference is not a teaching reference but an anticipatory reference which specifically discloses regular octahedron needle-like particles.

Furthermore, page 6 of the substitute specification defines the term "substantially octahedral" broadly to be the following:

> " The primary particles seen in Fig. 1 also include particles of other shapes, that is, a) particles wherein the apex formed by intersection of four crystal faces of octahedron is not complete and is formed in the form of a plane or an edge, (b) particles wherein a different crystal face is formed at the edge formed by intersection of two crystal faces of octahedron, and (c) particles wherein one crystal face is jointly owned by two primary particles or wherein other primary particles grows from the surface of of one primary particle. These primary particles do not have a completely octahedral shape but can be regarded as a substantially octahedral shape. In the present invention, the "substantially octahedral shape" include these various shapes and further include those polyhedrons formed by partial chipping of the above shapes or by joint possession of crystal face in complicated manners between two primary particles."

Based on this broad definition for "substantially octahedral" in the specification, the regular octahedron needle-like particles of the reference can clearly be considered "substantially octahedral".

With respect to art rejections of record based on Zhong et al. (US Pat. No. 5,631,104), applicant asserts that the conditions and formulas in the methods of Zhong et al. ('104) are not identical to those of the present invention and would not produce primary particles having substantially octahedral shape and that the present specification at page 11, lines 5-10 do not inherently result in production of positive electrode active materials having the characteristics recited in the present claim. In response, the applicant has not disprove the Examiner's inherency arguments of the Zhong et al. ('104)reference because the specification states at page 11, lines 5-10 that "[p]roduction of the positive electrode active material of the present invention is conducted by firing a raw material mixture consisting of given proportions of salts and/or oxides of various element(s) and an addition element(s)], in an oxidizing atmosphere at 700-900 C for 5 to 50 hours."

The Examiner provided detailed reasons in the previous final office action that are reiterated in the present office action as to why the methods of Zhong et al. ('104) are identical to applicant's disclosed method and would inherently yield the product having the claimed properties. Specifically, Zhong et al's ('104) formula in the abstract encompasses those claimed by applicant as stated in the previous office action and in the present office action above. It is applicant's burden to provide experimental proof that the methods of Zhong et al. ('104) do not yield primary particles having substantially octahedral shape. Applicant made similar assertions

regarding the art rejections based on Manev (US 5,961,949) of record and Examiner remains unconvinced for similar reasons given for art rejections based on the Zhong et al('104) reference. **Applicant has not experimentally shown that the methods of Zhong et al. and Manev do not produce primary particle having the claimed properties.** Since the methods incuding the raw materials, temperature, and time to produce the lithium manganese oxides of Zhong et al. and Manev are similar, if not identical to applicant's disclosure, the methods produce positive active materials that would inherently encompass primary particles having the claimed properites.

Finally, since applicant admits on page 4 of the amendment filed on 6/23/2003 that it is well known that the specific raw materials and firing conditions employed in making such particles control the shape and size of the result particles, then the resulting primary particles obtained by either the methods of Zhong et al. ('104) or Manev et al. ('949) using the same raw materials and experimental conditions disclosed in the present specification would have the same shape and dimensional characteristics as presently claimed by applicant.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

15. Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster, Ph.D. whose telephone number is (571) 272-1293. The examiner can normally be reached on Monday through Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at (571) 272-1292.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

st/ Susy Tsang Foster

Susy Tsang-Foster
Primary Examiner
Art Unit 1745